ANIMAL ENCLOSURE SAFE DOOR SYSTEM AND METHOD

FIELD OF THE INVENTION

[0001] This patent specification relates to the field of systems and methods for controlling access to animal enclosures. More specifically, this patent specification relates to a system and method for controlling access to animal enclosures that also prevents inadvertent injury to animals, including humans, and damage to physical components of the device.

BACKGROUND

[0002] Access to animal enclosures, such as chicken coops, goat pens, and the like, is enabled through the used of various types of doors. A new development in this field is the use of automated doors which are able to open and/or close automatically without human intervention. There are several manufacturers that provide door devices that use an actuator to close and/or open a door which controls access to animal enclosures. However, these devices do not provide safety features which prevent animals and other objects from being caught or crushed in the door. With the products that exist in the market, the controller starts the actuator to close the door. If a chicken or anything else obstructs the doorway, the actuator will keep pressing the door closed until the actuator reaches full extension or the actuator breaks. This has killed many animals, such as chickens, by crushing them with the actuator and door. Even more alarming, if a child was in the way, it could do the same to them as the actuators used are very powerful.

[0003] Therefore, a need exists for novel systems and methods for controlling access to animal enclosures. A further need exists for novel systems and methods for controlling access to animal enclosures that also prevent inadvertent injury to animals, including humans, and damage to physical components of the devices.

BRIEF SUMMARY OF THE INVENTION

[0004] According to one aspect consistent with the principles of the invention, a computer implemented animal enclosure safe door system is provided. The system may be coupled to or comprise an animal enclosure, such as a chicken coop, goat enclosure, pig pen, etc. In some embodiments, the system may include: a door movable between an open position and a closed position; an actuator operable to motivate the door between the open position and the closed position; a computing platform having a processor, a memory in communication with the processor; actuator logic stored in the memory, executable by the processor and configured to operate the actuator to move the door between the open position and the closed position; and sensor logic stored in the memory, executable by the processor and configured to detect an obstruction object in the path of the door to the closed position. The sensor logic may communicate with the actuator engine to stop the door movement for a period of time when an obstruction object in the path of the door to the closed position is detected.

[0005] According to another aspect consistent with the principles of the invention, a computer implemented method for moving a door of an animal enclosure safe door system safely into a closed position is provided. In some embodiments, the method may include the steps of: motivating the door from an open position into the closed position, via an actuator operated by an actuator engine of a controller unit; detecting the presence of an obstruction object in the path of the door to the closed position, via a sensor engine of the controller unit; stopping the movement of the door for a period of time, via the actuator engine and a timer engine of the controller unit; and motivating the door into the closed position via the actuator engine of the controller unit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] Some embodiments of the present invention are illustrated as an example and are not limited by the figures of the accompanying drawings, in which like references may indicate similar elements and in which:

[0007] FIG. **1** depicts a perspective view of an example of an animal enclosure safe door system according to various embodiments described herein.

[0008] FIG. **2**A illustrates a perspective view of an example of an animal enclosure safe door system having a door in an open position according to various embodiments described herein.

[0009] FIG. **2**B shows a perspective view of an example of an animal enclosure safe door system having a door in a closed position according to various embodiments described herein.

[0010] FIG. **3** depicts a block diagram of some exemplary components of an example of an animal enclosure safe door system according to various embodiments described herein.

[0011] FIG. **4** illustrates a block diagram illustrating some applications of an animal enclosure safe door system which may function as software rules engines according to various embodiments described herein.

[0012] FIG. **5** shows a block diagram of an example of a computer-implemented method for moving a door safely into a closed position according to various embodiments described herein.

DETAILED DESCRIPTION OF THE INVENTION

[0013] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items. As used herein, the singular forms "a," "an," and "the" are intended to include the plural forms as well as the singular forms, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises" and/or "comprising," when used in this specification, specify the presence of stated features, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, steps, operations, elements, components, and/or groups thereof.

[0014] Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one having ordinary skill in the art to which this invention belongs. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and the present disclosure and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.